

the cannon

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December 2, 1999

Robert J. Birgeneau Named U of T's Fourteenth President

FROM U OF T PUBLIC AFFAIRS

On November 30, the University of Toronto Governing Council approved the appointment of Robert J. Birgeneau as the university's 14th president, effective July 1, 2000. He will succeed J. Robert S. Prichard, who will return to teaching in the Faculty of Law and OISE/UT at the conclusion of his ten years as president on June 30.

Birgeneau has been dean of science at Massachusetts Institute of Technology (MIT) since 1991 and was chair of the department of physics from 1988 to 1991. He joined the science faculty at MIT in 1975. Internationally acclaimed for his research in solid-state physics, Birgeneau recently led a pioneering study on the status of women faculty in science at MIT. He is a 1963 graduate of St. Michael's College at U of T.

"Dr. Birgeneau is an outstanding academic who left Canada a number of years ago and is returning now because of an opportunity to lead his alma mater from greatness in a Canadian context to international acclaim," says Wendy Cecil-Cockwell, chairman of the presidential search committee and U of T's Governing Council. "He believes in being the best and wants to advance our mission as a great international research university. The search committee unanimously recommended him as best exemplifying the qualities the university was seeking in its next leader — a sound record of commitment to first-class teaching and research, the ability to foster cooperation and teamwork throughout all levels of an institution, a strong

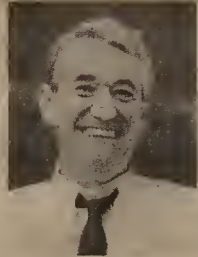


PHOTO: DONNA COVENSEN, MIT NEWS OFFICE

Dr. Robert Birgeneau

belief in diversity, and proven success in facilitating partnerships with government and industry. Dr. Birgeneau brought MIT's physics department, and later the school of science, right to the top. He sets a course and he does it."

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Hungry Engineers Raise Big Bucks

BY YUVAL GRINSPUN

15 people went without food for 30 (long) hours to raise money for the Daily Bread Food Bank on November 5, 1999. The event, in its fourth year, raised \$650 — money that will go to help the needy in the community. A whirlwind weekend comprised of puzzles, movies, volleyball, diplomacy and ended with a hearty meal at the Golden Griddle. Organizers would like to thank the participants and the supporters (the moolah givers).

which one of these men is charging a battery?



...and who are the two at the City Dinner Dance?
These and other controversial questions answered in this month's Cannon.

Toronto to Host Ontario Engineering Competition

BY OEC 2000 ORGANIZING COMMITTEE

OEC is coming to Toronto! U of T Engineering will be the host the 21st annual Ontario Engineering Competition. The event will be held on March 3rd to 5th primarily at Hart House, with all competitors staying at the Delta Chelsea Hotel just off campus.

The competition has six categories, and has over twenty cash prizes to give away. Clever students can really make a killing and get industry exposure. "This is exactly the sort of thing Ontario Power looks for in its applicants," says Steve Parsons of Ontario Power (formerly Ontario Hydro).

Briefly there are 3 design categories and 3 communication categories. The 3 design categories are Corporate, Entrepreneurial and Team Design. The

first two have the biggest cash prizes at \$3500.00 for first place. Your thesis (or PEY design project, or any cool design project) may qualify. Check the website www.ecf.toronto.edu/~oec for rules and eligibility information and then contact us with any question at with DESIGN in the subject line to find out. The three communication categories are Editorial Communication, Explanatory Communication and Parliamentary Debate. Rules and more information on all the categories are available on the web.

Anyone interested in volunteering to help either at the event or now during preparation is invited to do so. Email oec@ecf.toronto.edu with VOLUNTEER in the subject line to find out more.

This is going to be a great competition.

W.I.S.E. Holds "Life After Undergrad" Seminar

BY AMY LEUNG AND WAI-LYN WONG

"Life After Undergrad"... have you given it any thought yet? If you're like myself, right now the only thing on your mind is how to get through undergrad first. On November 23, Women in Science and Engineering at U of T (W.I.S.E. U of T) held a seminar at Hart House with three unique guest speakers, who shared their personal experiences of "life after undergrad." Our speakers were at different stages in their lives, and traveling down different career paths. Their backgrounds range from biochemistry and pharmacy to engineering, and from graduate studies to the workforce.

Marta Ecsedi, past president of the U of T Alumni Association, spoke about her career after graduating with a U of T civil engineering degree. She spoke passionately about the greatest things about engineering being that you never stop learning; and that no two jobs are ever the same. She expressed the importance of learning how to learn, and how that better prepares engineers for the workforce. Marta began her career at Bell Canada in the Network Structures

Department. In her twenty-three years at Bell, she has held the positions of staff engineer, section manager, and associate director. Despite coming out of university with civil engineering background, Marta has spent most of her career in the telecommunications industry, and as a result has learned more about electricity on the job than most of us can fathom. Since then, she has started her own consulting business and is also working for Clearnet Communications Ltd. as Manager of the Engineering and IT departments. Coincidentally, Clearnet was also the sponsor for this event. Okay, so maybe it wasn't so much of a coincidence!

Cristina Sanchez, a doctoral student in physical biochemistry, shared her experiences in graduate school. She emphasized the significance of following your heart, when deciding to take the path of grad studies. Graduate school brings along with it, among other things, teaching, course work, and research. She recommends researching the supervisors in your field at various universities. "You really want a supervisor that suits your needs and with whom you have a good rapport. Don't be shy about visiting their labs and talking

see **FOLLOW** page 5

"I KISS YOU !!!!!!"

— Mahir

(There are better ways.) GRADitude.

opinions

the cannon

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PLEASE NOTE

the cannon is a medium through which undergraduate engineering students can express their opinions. The views expressed herein are those of the author and do not necessarily represent those of the editors or the Engineering Society unless so indicated.

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editorial

Does it seem to anyone else that the amount work we do here at Skule™ and the amount we understand has absolutely no bearing on the mark we receive at the end of the day? I mean, we understand that not all our professors are instrumentation designers, but our marks sometimes seem so independent of anything important—you'd think our profs weren't engineers.

Take problem sets, for example. We understand the need for them. Ideally, they help us rehearse the skills which our courses are trying to impart to us. They help us comb out the complex ideas we receive during lectures. But just as some professors pretend to design their problem sets with these goals in mind, students also pretend to do these problem sets themselves. Sometimes they are worth enough of the final mark that when things get too hectic, students end up copying someone else's problem set. Other times, they require us to just mindlessly regurgitate—to a marker who is primarily interested in quantity or buzzword density. Often we do not receive the crucial feedback that is the key to learning.

What meaning can we attach to our problem set marks?

As engineers, we must realize the importance of good design. A course's evaluation methods can be designed so that students, TAs, and professors get the most out of it, so that they are efficient and accurate. It need not be a game of "they'll pretend to give us meaningful work, we'll do (or in some cases, pretend to do) the meaningful work, and they'll pretend to give us meaningful marks." The engineering education is much too important... and much too expensive.

all the rage

BY CHRIS PERESSOTTI

WOW I'll bet that I had you all fooled at the start of the year when I had stated that this would be monthly column. Note to Flosh: 3rd year sucks! Note to aspiring EngSci-Elects: you think your life is terrible now...

Don't you hate it when you're at an intersection, you've pushed the button to cross, and someone walks up next to you and pushes the button again? I mean, HELLO, do you think so little of me as to suggest that I can't figure out the meaning of the giant picture of a finger pushing a button followed by a happy stick-man crossing the street?!

The Bnad attended the Santa Claus Parade Nov. 21st and – geez Louise! – you wouldn't believe the hassles we get from those Metro Cops (who, incidentally, are "tops"). Just because someone told us that the parade starts at 2:00 pm instead of 1:00 pm and we have to bust through the crowd to get on the route doesn't mean that we don't BELONG there.

The AGM.

If there's one reason to put off 'growing up' for as long as possible, it's to have decent conversations. Many a time has my skin crawled while listening to the conversation of full-blown 'adults':

"Hi Betty, how are you?"

"Hi Joe, I am fine."

"How is your car?"

"My car is fine. How about the weather?"

"Mercy me, it certainly is cold!"

"Hey Dottie, you have a chicken salad sandwich for lunch!"

"Yes, I do!"

"Isn't that the third time this week?"

"No, only the second."

"OK."

SHUT-UP!!! SHUT-UP, SHUT-UP, SHUT-UP!!!

Isn't it annoying how the world can be full of war, poverty, and injustice, and some losers can't stop complaining about their petty little problems with the world? Live with it!

On that topic, how terrible is it when people explain your own jokes to you? For instance, if you know me, you know that I've got some pretty crazy hair. So if I look at someone else with crazy hair and say "Wow, look at that guy's stupid hair. He looks so stupid", please don't be the one to follow it up with "Huhh-hunh! But – hunh! – Chris, look who's TALKING! YOUR hair is pretty crazy TOO, dontcha know!" – you're guaranteed a debilitatingly-sarcastic reply.

FIN.



In Defence of the AGM

BY CHRIS PERESSOTTI — VP INTERNAL

A funny thing happened to me as I was taping up some last-minute advertising for the Engineering Society's recent Annual General Meeting. A passing student stopped for a second and asked what was going on 'Tonite', looking at the huge bolded 'TONITE' that was prominently displayed. After telling him about the AGM that was going to happen in a couple of hours, he shook his head in disgust and, in parting, said plainly, "I went to that last year, and it's pure bullshit".

Being VP Internal, it was hard to not feel a little defensive about one of the major events of my year, and I'm proud to say that after weeks of massmails, promotion, and preparation, the Engineering Society's Annual General Meeting (AGM) of 1999 went off without a hitch... or did it?

As MC 102 filled with a number of students that easily surpassed the quorum requirement, I felt extreme relief at knowing that everything was going to be OK: the meeting would be fully legit and I had gotten stu-

dents to give a damn about how their Skule™ was run. Approval of the budget, the first few motions... everything was going great. Until the "less serious" motions.

Not having attended an AGM prior to this one myself, I had only heard stories of how a few ridiculous motions are brought up every year. I assumed that these motions were brought up, people laughed, and then they were immediately voted down. Unfortunately, this does not seem to be the case. There's something about consuming time making amendments to the amendments to the amendments of motions (that really shouldn't have had a chance in the first place) that gets really annoying really fast. There's something about 'beating a dead horse' to a bloody pulp that made many of those present visibly angry at where the meeting had gone. I know that I couldn't restrain myself from launching angry words toward those who couldn't understand that I had convinced a number of very busy students to take time out of their schedule so that they could take part in something that I had described as being pivotal to the operation of the Engineering Society.

To keep things straight, I'm not denouncing the spirit in which the "joke motions" were made. Being Jr. Bnad Leedur, I'd be a total hypocrite to scold people for trying to inject some fun into an otherwise-serious situation (lecture crashing, anyone?). The main problem were those who couldn't see when things had gone far enough, and continued to debate useless points despite the requests from many present to get on with the meeting.

My main purpose for writing this reflection on the AGM was to thank all of those who attended, give a couple of hints to those who couldn't understand the hostility in MC 102 by the end of the meeting, and apologize to anyone who has vowed to never go to another Eng Soc AGM for as long as they live. Believe it or not, the AGM does serve a very important function within our Engineering Society, and it's important that, for the sake of your Skule™ (and future VP Internals) that the attendance level at the AGM is maintained.

Here's to a more tolerable AGM in 2000.

— in the spirit of the (exam) season —

If

— BY RUDYARD KIPLING

If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you
But make allowance for their doubting too,
If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated, don't give way to hating,
And yet don't look too good, nor talk too wise:

If you can dream — and not make dreams your master,
If you can think — and not make thoughts your aim,
If you can meet with Triumph and Disaster
And treat those two impostors just the same;
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools:

If you can make one heap of all your winnings
And risk it all on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breath a word about your loss;
If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when is nothing in you
Except the Will which says to them: "Hold on!"

If you can talk with crowds and keep your virtue,
Or walk with kings — nor lose the common touch,
If neither foes nor loving friends can hurt you;
If all men count with you, but none too much,
If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the Earth and everything that's in it,
And — which is more — you'll be a Man, my son!

World Class U of T—New Prez's Priority

continued from page 1

"This is an inspired appointment," says U of T President Robert Prichard. "There could be no better choice to lead U of T into the next century. Dr. Birgeneau is a scholar and academic leader of the highest international standing. This is brain gain at its best — one of Canada's great minds is returning to guide a great university. It is wonderful news for the university, the province and the nation. It will be a pleasure to work with him over the next seven months to ensure an excellent transition between my administration and his."

"The University of Toronto is an outstanding institution on the brink of truly international stature," says Birgeneau. "At MIT I've had the privilege of working at one of the leading schools of science in the world where there was continuous exposure to outstanding students, faculty and staff. Returning to Toronto and my alma mater, I know U of T to also be an outstanding institution and I look forward to being a part of the transformation that will shape the university for the next 30 years."

Birgeneau received his doctorate in physics from Yale University in 1966 and was on the faculty there for a year before spending a year at Oxford University through the National Research Council of Canada. Prior to joining MIT he was a member of the technical staff at Bell Laboratories in New Jersey. He has received numerous awards and honors for his research in understanding the fundamental properties of condensed matter using neutron

and x-ray spectroscopy. These honours include the Yale Science and Engineering Alumni Achievement Award, the Oliver E. Buckley Prize for Condensed Matter Physics, the IUPAP Magnetism Award and most recently, the J. E. Lilienfeld Prize. Birgeneau is an outstanding educator, and his former graduate students and research fellows are now professors at the world's top research universities including Columbia, Cornell, Georgia Tech, MIT, McGill, Princeton, the universities of Maryland and Pennsylvania, Rutgers, SUNY Stonybrook and the University of California. He has authored more than 350 journal articles, many of which have been written during his term as dean of science.

Among Birgeneau's initial priorities for U of T is to ensure its continued progress toward world class stature. "That would be my highest priority," he says. "I also intend to continuously enhance the quality of education, in part by incorporating the promise of new technologies. Great progress will be made in research and education in the next decade with unprecedented opportunities in a variety of fields including the health and life sciences, brain and cognitive science, information sciences and communications. At the same time, U of T is renowned for its excellence in the humanities and social sciences and these will continue to form the intellectual core of this great university." Birgeneau also says: "One of my primary goals will be to increase the diversity of the faculty so that it properly reflects the wonderfully heterogeneous community that it serves."

skuleTM news

Maclean's Rankings Released

BY IVEY CHIU

Once again, Maclean's Magazine has released the results of their Canada-wide universities survey. In this issue, filled with photographs of happy students and ads for RESPs and universities, 48 schools across the country were categorized and then ranked in these peer groupings: Medical Doctoral: these schools offer a large variety of programs and research at the Ph.D. level as well as medical schools. Comprehensive: these schools offer a large variety of programs and research at the undergraduate and graduate level, including professional degrees. Primarily Undergraduate: these schools are focused mainly on undergraduate programs. However, regardless of peer grouping, the Maclean's ranking is primarily an index of the undergraduate experience. All 48 schools were ranked based on reputation and the results of the top twenty were published.

In determining the rankings, Maclean's weighed factors such as class sizes, composition of student body, average high school grades, faculty, student awards, expenses and library acquisitions. The overall rankings were based on the results of surveys completed by high school guidance counsellors, university officials, CEOs and corporate recruiters. Students did not participate in the survey.

What does Maclean's say about our alma mater? On the whole, the University of Toronto ranked well. Not surprisingly, Toronto was categorized as a Medical Doctoral school, in league with other schools such as UBC, Queen's and McGill. Toronto has the highest number of awards per full-time faculty, the largest library system and the strongest alumni support. Amongst the other Medical Doctoral schools, Toronto has the best reputation and is perceived as the school most likely to produce the leaders of tomorrow. In terms of overall rankings, Toronto was ousted from the top spot several times by Waterloo and McMaster.

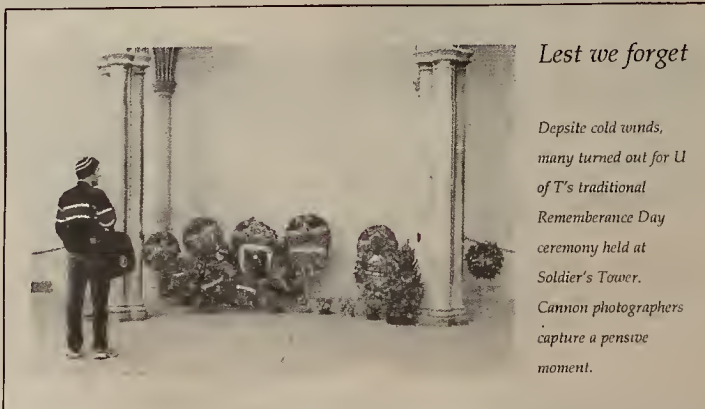
In terms of the engineering undergraduate experience, where does Toronto stand? It is hard to extrapolate any data regarding engineering programs from these rankings as the Maclean's methodology seems to be focused on arts and science programs with reputation and prestige accounting for a large portion of the rankings.

The Maclean's rankings are very much a guide for parents, potential benefactors and those gearing up to recruit amongst the newest crop of graduates. For high school students trying to make a decision regarding the next four years, the most relevant portion of the Maclean's rankings seems to be the array of stunning campus shots and photographs of smiling, happy students.

1999 Yolles Winners on Display in Galbraith

BY RICHARD YEE

Entries to the annual Yolles Design Competition were displayed in the lobby of the Galbraith building from November 15-26. This competition is cross-disciplinary, where senior civil engineering students and senior architecture students collaborate to tackle a design problem. The 1999 competition involved designing a proposed community center in North York's Cawton Park. Established by its namesake, Mordon Yolles of Yolles Group Inc., the competition is designed to "simulate an integrated design process between engineers and architects." First prize went to the design team of Carolina Chan and Michelle Au (Architecture) and Alex Cheng (Engineering). Second prize went to the design team of Gere Ascenzi and James Sheffield (Architecture) and Anya-Lisa Bobert (Engineering).



Lest we forget

Despite cold winds, many turned out for U of T's traditional Remembrance Day ceremony held at Soldier's Tower. Cannon photographers capture a pensive moment.

Nanoengineering Option in Engineering Science Set for 2001-2002 Inauguration

BY CHRISTOPHER MAR

As the advent of a new millennium draws to an end, the world has embraced three technologies—information technology, biotechnology, and advanced materials—that will signal the dawning of a scientific revolution. Underlying these technologies is an emerging discipline, fundamental in nature, yet prerequisite for a "shift in paradigm," as Thomas Kuhn describes it in his book *The Structure of Scientific Revolutions*. This paradigm shift, characterized by achievements sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity, and, simultaneously, to sufficiently leave open-ended problems for the redefined group of practitioners to resolve, is an inevitable consequence of the three mentioned technologies' convergence. This underlying discipline is nanotechnology, the essence of which will be taught in a new upper-year Engineering Science option, nanoengineering.

"Nanoengineering encompasses two fields, nanostructured materials and nanotechnology, which have typically been considered as separate entities. Scientists and engineers have realized that the fundamental properties of materials can depend not just on the atomic constituents and their relative orientations, but also on the physical size of a specimen when that size is comparable to the fundamental length scale associated with a property of interest. Since there is a characteristic length scale associated with virtually all properties of interest, this concept is very general", says Department of Metallurgy and Materials Science Chair, Doug Perovic. "The fact that many important length scales are between 1nm and 200nm, nanoengineering defines a new paradigm that will redefine industrial development throughout the world."

The new option, which will initially be chaired by Professor Steve Thorpe, will be delivered through the collaboration of several departments of the University of Toronto. These include the Department of Metallurgy and Materials Science (the option's primary affiliate), the Department of Electrical and Computer Engineering, the Department of Chemistry, the Department of Physics, and the Institute for Biomaterials and Biomedical Engineering. Furthermore, an advisory council will be formed to monitor and regulate the progression of the initiative.

The curriculum will draw upon a number of existing courses from the Department of Applied Science and Engineering, as well as the Faculty of Arts and Science. In addition, several new courses including *Synthesis of Nanostructured Materials*, *Biomimetics* (the artificial manipulation and mimicking of nanos-

tructured materials), and *Advanced Physical Properties of Structural Nanomaterials* will be created.

The curriculum will be complemented by a supporting infrastructure of research and training initiatives that will help bridge the gap between classroom and industry. Such an infrastructure will facilitate the development of the option's research and applications objectives. Specifically, it will provide an ideal setting for the development of industrial research projects, fourth year thesis projects, PEY opportunities, summer employment, and future graduate school placements. Examples of these initiatives include Energenius Centre for Advanced Nanotechnology (ECAN), the Centre for Microelectronics Assembly and Packaging (CMAP), the National Centre of Excellence (NCE) in Nanostructured Materials, the Canadian Institute for Advanced Research (CIAR) Nanoelectronics Program, and Nortel Institute.

Given the potential in a fundamental discipline as broad-ranging as nanotechnology, there is a forecast of high probability of a sustainable job market. The present nanotechnology market is estimated at \$5B (US) worldwide, and the UK, Parliamentary Office of Science and Technology recently predicted that this figure would grow to \$20B by the year 2000. MIT's "Technology Review" (May/June 1998) reports that nanotechnology is "already making a commercial impact in applications as diverse as sunscreen lotion, catalysts, and even nanoparticles to reinforce concrete." Several companies have already indicated interest in future graduates of the nanotechnology option. Examples of these include Stuart Energy Systems, Integrant Technologies, Stelco Inc., Celestica, Nortel, Newbridge Networks, and Magna International.

"The recent Roundtable Discussions held by Ontario's Ministry of Energy, Science, and Technology with senior business leaders in fast-growing segments of the economy identified five areas of very rapid growth: advanced manufacturing technologies, information technology, telecommunications, biotechnology and pharmaceuticals, and new media. In all cases, nanoengineering underpins future technological leadership in these fields", notes Perovic.

Although the option proposal was slighted for approval for the 2000 academic year, departmental support is very strong and the Nanoengineering Option will most probably be open to Engineering Science students beginning in September 2001. This year's Frosh, therefore, will be the first to make nanoengineering an option choice. It is expected that 30 students will enrol in the option each year.

skule™ news

PEO/UES Conference '99



ESSCO visits Parliament Hill

BY PAUL GRAHAM — VP EXTERNAL

The Professional Engineers of Ontario / Undergraduate Engineering Students (PEO/UES) conference, designed to bridge the gap between students and industry, took place this past October 21 to 24. The conference was hosted by Carleton Engineering and took place primarily in the Ramada Hotel in Ottawa. Daniela Dighi (Elec 0T3), Tami Wilkins (MMS 0T2), Xavier Galvez (Comp 9T9 + PEY) and myself attended this conference on behalf of U of T. This article is a compilation of the conference reports, as well as some of my own input.

A few speakers were on hand: Peter DeVita, the president-elect of the PEO and former SkuleNite cast-member, spoke about the PEO and its recent activities. Mr. DeVita has been a member of the PEO since 1975, and earned both his BASc and Master's degrees here at Skule. The second speaker was Trevor W. Pearce, an assistant professor at Carleton University. To strengthen the ideas of accreditation as mentioned in the previous talk, he spoke about the purpose of the Canadian Engineering Accreditation Board (CEAB). Finally, Johnny Succon and Shoshanna Mensher spoke about the upcoming PEO Student Membership. The participants were given industry tours of Dave Florida Space Labs and the Nortel Networks headquarters at Carling.

Mr. DeVita defined the PEO as a self-regulatory professional body whose primary objective is to protect the public by regulating and enforcing the engineering practice. This said, it is also the responsibility of the PEO to watch out for the public interest as new technologies arise. Some examples Mr. DeVita spoke about were the dangers of using cell phones, geneti-

cally altered herbicides and anti-viral agents. He emphasized that it is easy to get swept up by new technologies. The PEO acts as a safeguard to ensure that such technologies are properly regulated.

Mr. DeVita reports that the PEO is more active than it has ever been before. Council meetings are no longer behind closed doors, but are open to the public.

He also spoke about the local issue surrounding the term "Software Engineering." He said that software has its roots computers, which in turn has its roots in electrical engineering and electronics. He stressed that Computer Science, which is associated largely with Software Engineering, is the first instance of science that is based on a man-made technology rather than a characteristic of nature. According to Mr. DeVita, such a powerful technology should be regulated.

He stressed that programming is not equivalent to Software Engineering, and that giving it the name Software Engineering weakens the credibility of the word engineering. The PEO recognizes that a specialty exists in engineering with an emphasis on software design. Software Engineering, however, should only be reserved for professional engineers maintains the PEO, since engineering titles are given based on an accredited standard. In March 1998, the Engineering Discipline Task Group was established to identify and develop the means to regulate the engineering practice in emerging disciplines.

Mr. Pearce discussed how there was a need for an engineer to be adaptive, creative, responsible and responsive to changes in society, technical and career demands.

He spoke about the goals of a B.A.Sc. degree, which deals with problem-solving, design, its purposes of

providing a good technical background, a sense of responsibility in ethics, and a broad education in different fields of study. Two challenges that he mentioned were the evolution-shifting targets of industry and the orientation gap. We cannot predict technology's emphasis five years from now, creating shifting targets. Also, the increasing rate of technology change is making it possible for relatively older people to be working with an obsolete technology.

According to Mr. Pearce, the CEAB takes on a responsibility to assist in educating the individuals to keep up with technology change by properly accrediting the institutions, ensuring that the highest quality of education is maintained. The CEAB is able to properly establish a curriculum by getting feedback from industry and by getting information from the government. Proper curriculum content is composed of technical foundations in engineering (composed of math, science and design), complementary studies, design and teamwork experience.

Johnny Succon and Shoshanna Mensher spoke about the upcoming PEO Student Membership initiative — which, launched by Engineering Student Societies Council of Ontario (ESSCO) has been in the works for several years. Shoshanna Mensher, former ESSCO president, is now employed by the PEO for the purpose of setting up the student membership.



Welcome to 'Shmooving with your VP-X' with Paul Graham (left). Today's guest: Carleton's EngSoc prez (the other left).

The Student Membership initiative seeks to provide clarity and relevance of the profession to the student, provide a direct communication mechanism to the PEO, increase awareness of the role of self-regulating body, and recognize Ontario engineering students within the profession. FREE to anyone who applies online, the membership means a personalized membership card, access to PEO publications, program & general information packages (local chapters hold tours, and have their own events), and regular communication opportunities. There will be a student membership website on the PEO site, on-line registration, links to ESSCO and engineering society sites, single point of contact at PEO, and a faculty liaison contact at each campus. The program will be available online January 1, 2000. Other benefits will be available once the program is up: eligibility for graduated benefits, student & grad surveys, employment advisory & job resources, mentorship & outreach programs, web-based mentoring forum and speakers & seminars.

If you have any questions regarding this conference or others, feel free to email me at vpexternal@skule.ca. Next time... ESSCOFIQ: The French Connection.

Follow Your Heart, WISE Speakers Say

continued from page 1

to the other grad students working under that supervisor."

Katherine O'Donnell, a doctor of pharmacy, described her experiences of learning a lot about herself, while going through her undergraduate years, and clinical residency. Life creates many surprising turns and twists, she says. While she originally envisioned working at a hospital as a clinical pharmacist, she soon realized that that wasn't exactly what she wanted most. Upon completion of her doctorate of pharmacy, Katherine began work at a pharmaceutical consulting firm. After finding her niche there, she is

now planning to work towards an MBA in the next couple of years.

While all three speakers took different paths after their first university, they all agreed that you must follow your heart, and be honest with yourself, even though it may not always be easy. Despite having all three speakers being female, their wisdom and experiences are not only limited to the interest of females; membership for W.I.S.E. U of T is open to males and females alike. For more information and/or inquiries about the group, membership and future events, contact: wise@ecf.utoronto.ca.

Engineering Society Annual General Meeting

Wednesday November 3rd, 1999

7:00 pm in MC 102

MINUTES OF THE MEETING

Present: Mark Angelo, Erin Barkel, Claudio Barrera, Althea Barthos, Karen Caputo, Ivey Chiu, Grace Choi, Tim, Christie, Jean Cruz, Tricia Cruz, Chris Davis, Keita Davies, Ben Debgheh, Brian Dennis, Saleem Deshmukh, Jeremy DeSouza, Adam DeVita, Daniela Dighi, Kelly Donovan, Alain Duclos, Anna Edwards, Rebecca Feldman, Neeraj Ghai, Amanda Goundry, Paul Graham, Yuval Grinspun, Jenny Hartnel, Andrew Hawkins, Agnes Jedrzejewski, Erika Kiessner, Kristen Koehl, Jeremy Koudelka, Jane Lam, Wilfred Lam, Gordon Lau, Carlo Mak, Andre Mercanzini, Nadine Miller, Gary Miranda, Ashley Morton, Mi Li Ng, Rob Noce, Han Min Park, David Patman, David Perry, Jason Pilon, Brian Poon, Vikram Ravindran, David Rebello, Patricia Ricci, Ian Roberts, Abeer Salam, Rob Siklos, Alexander Smith, Vinder Sodhi, Ajay Sood, Adam Tenenbaum, Struan Vaz, Sean Voskamp, Sara Vossoughi, Adam Walker, Tami Wilkins, Dave Wright, and Tomasz Wronski

Meeting called to order at 7:21 PM by A. Morton.

Amend the agenda to include 'Appointing an Auditor for the 1999-2000 Skule™ Year' between agenda items 3 and 4.

Amend the agenda to include 'Constitutional Amendment: changing the time of the Engineering Society's general elections' between agenda items 3 and 4, after the 'Auditor' motion.

Amend the agenda to include 'Constitutional Amendment: Allowing 3rd year students to hold the position of Engineering Society President' between agenda items 4 and 5.

Motion to adopt the amended agenda (1st - S. Voskamp, 2nd - B. Dehghan): Motion Carried

Karen Caputo presents the Engineering Society's Budget for the 1999-2000 Skule™ Year
A. Duclos asked that all references to the "Geo Club" in the budget be changed to "Min Club".

Motion to Appoint an Auditor for the 1999-2000 Skule™ Year: "BIRT the auditor for the University of Toronto Engineering Society for the 1999-2000 Skule™ Year be McLaren, Sanders & Daurio" (1st - S. Voskamp, 2nd - C. Davis): Motion Carried

Discussion: Why must the constitution's reference to election timing be changed?

R. Morris stated that the current restriction of holding elections during the second week in March can be difficult due to the presence of Reading Week.

Motion: "BIRT Sect. 9.4.1. of the constitution be changed from 'There shall be a General Election, held during the first complete week of classes in the month of March to elect the Officers...' to 'There shall be a General Election, held during the first complete week of classes in the month of March to elect the Officers...'" (1st - J. Hartnel, 2nd - D. Wright): Motion Carried

Motion: "BIRT the room currently known as 'Eng Soc' (Room B670 in the Sanford Flemming Building located at 10 King's College Rd.) be renamed and referred to hereafter as the 'Julie Wilkinson Memorial Engineering Society Common Room'" (1st - S. Voskamp, 2nd - T. Christie): Motion Carried Unanimously

Discussion: Allowing 3rd year engineering students to hold the position of Engineering Society President (put forth by T. Wilkins).

T. Wilkins wanted the restriction on presidential candidates to be changed to 3rd and 4th year students instead of 4th year students exclusively. She argued that a 3rd year student has enough experience to be President and should not be penalized for not being in their final year.

N. Miller stated that the ability to be President is one of the 'perks' of 4th year and that it should remain exclusive to that year.

J. Pilon voiced a concern that 3rd year students might NOT have enough experience.

A. Edwards questioned putting a 3rd year student into a position of such huge responsibility when many students find their 3rd year to be the most challenging and will likely find themselves much more concerned with passing than being President.

T. Wilkins inquired as to whether the main problem people had with the proposition was that 3rd year students might be more likely to drop out of the Presidential position unexpectedly.

S. Voskamp pointed out that allowing 3rd and 4th year students to be president would give more choice of who to make President if the elected President cannot fulfil their duties.

K. Caputo declared that a 4th year gets more out of being president than a 3rd year student.

D. Wright noted that being a 3rd year President would lead to an anticlimax in the student's 4th year.

A. Edwards pointed out that the President is supposed to speak at the Iron Ring ceremony, something that ONLY graduating students are supposed to experience.

T. Wilkins continued to defend her idea, stating that she got the idea at various conferences she had attended. She maintained that if you have the right personality you can be President as easily in 3rd year as in 4th year.

R. Morris didn't like the idea that the presidential race could be watered down. There are always a few candidates for President, it's not as if there's a need for more.

J. Koudelka called the question

"BIRT Sect. 7.1.1. of the constitution be changed from '... the Member is 18 years of age or older and will be registered in the Fourth Year of the Undergraduate program...' to '... the Member is 18 years of age or older and will be registered in the Third or Fourth Year of the Undergraduate program...'" (1st - T. Wilkins, 2nd - J. Pilon): Motion Failed

Motion: "BIRT all Engineering Society Executive members (except those of Mineral Engineering) must wear a Bozo the Clown outfit on Feb. 16th, 1999" (1st - A. Duclos, 2nd - B. Dehghan)

Motion: Amend the 'Bozo' motion to read "BIRT all Engineering Society Executive members (except those of Mineral Engineering) must wear a Bozo the Clown outfit on Feb. 16th, 1999 provided by the Lash Miller Engineering fund" (1st - K. Caputo, 2nd - A. Walker): Motion Carried

Motion: Amend 'Bozo' motion to read "BIRT the Mineral Engineering contingency of the Engineering Society Executive must wear a Bozo the Clown outfit on Feb. 16th, 1999 provided by the Lash Miller Engineering fund" (1st - P. Graham, 2nd - C. Davis): Motion Failed

Motion: Amend 'Bozo' motion to read "BIRT all Engineering Society Executive members (except those of Mineral Engineering) must wear a Bozo the Clown outfit on Feb. 16th, 1999 provided by the Lash Miller Engineering fund" (1st - D. Perry, 2nd - B. Dehghan): Motion Carried

Motion: Amend 'Bozo' motion to read "BIRT all Engineering Society Executive members must wear a Bozo the Clown outfit on Feb. 14th, 1999 provided by the Lash Miller Engineering fund" (1st - D. Perry, 2nd - B. Dehghan): Motion Carried

Motion to accept the multi-amended motion "BIRT all Engineering Society Executive members must wear a Bozo the Clown outfit on Feb. 14th, 1999 provided by the Lash Miller Engineering fund" (1st - R. Siklos, 2nd - A. Sood): Motion Carried

Motion that all vinyl media within the Engineering Society's archives be transferred to CD for the purposes of preservation of history (1st - D. Perry, 2nd - J. Pilon): Motion Carried Unanimously

Motion that Ye Grande Olde Chariot Race (an annual race within engineering) must occur on the day set by the Blue and Gold Chair regardless of circumstances such as weather, plague, etc. (1st - B. Dehghan, 2nd - D. Perry)
After much useless discussion, this motion was WITHDRAWN.

Motion to Adjourn (1st - E. Kiessner, 2nd - C. Peressotti): Motion (eventually) Carried

exam schedule (eww)

ALL EXAMINATIONS LAST 2.5 HOURS.

FOR ALL THE EXAMINATIONS, PERMISSIBLE AIDS ARE PEN AND PENCIL, A BILINGUAL DICTIONARY, DRAFTING INSTRUMENTS AND, IF PERMITTED, AN ELECTRONIC CALCULATORS (SEE BELOW), WITHOUT THEIR CARRYING CASES.

UNLESS SPECIFICALLY PROHIBITED, THE USE OF CERTAIN TYPES OF NON-PRINTING, SILENT, SELF-POWERED ELECTRONIC CALCULATORS IS PERMITTED IN ALL EXAMINATIONS. THERE ARE RESTRICTIONS ON THE KINDS OF CALCULATORS PERMITTED. FOR COMPLETE INFORMATION SEE "INSTRUCTIONS FOR THE GUIDANCE OF CANDIDATES DURING EXAMINATIONS" POSTED OUTSIDE THE FACULTY OFFICE.

A: FOR THOSE EXAMINATIONS MARKED "A" ON THE TIMETABLE, A CANDIDATE MAY NOT BRING ANY AIDS OTHER THAN THOSE LISTED ABOVE.

B: FOR THOSE EXAMINATIONS MARKED "B" ON THE TIMETABLE, A CANDIDATE MAY NOT BRING ANY AIDS OTHER THAN THOSE LISTED ABOVE. SEPARATE AIDS OR DATA, AS SPECIFIED AT THE TOP OF THE EXAMINATION PAPER, ARE PROVIDED BY THE EXAMINER FOR DISTRIBUTION TO THE CANDIDATES BY THE REGISTRAR OF THE FACULTY.

C: FOR THOSE EXAMINATIONS MARKED "C" ON THE TIMETABLE, A CANDIDATE MAY BRING TO THE EXAMINATION AND USE A SINGLE AID SHEET, PREPARED BY THE CANDIDATE ON THE STANDARD FORM PROVIDED BY THE LECTURER.

D: FOR THOSE EXAMINATIONS MARKED "D" ON THE TIMETABLE, A CANDIDATE MAY BRING TO THE EXAMINATION AND USE SUCH BOOKS, NOTES OR OTHER PRINTED OR WRITTEN MATERIAL AS MAY BE SPECIFIED BY THE EXAMINER.

X: FOR THOSE EXAMINATIONS MARKED "X" IN THE TIMETABLE, AND ONLY THOSE, A CANDIDATE MAY BRING INTO THE EXAMINATION ROOM AND USE ANY BOOKS, NOTES, OR OTHER PRINTED OR WRITTEN MATERIAL FOR HIS OR HER USE ONLY.

STUDENTS SHOULD CONSULT THE "SEATING LISTS" POSTED OUTSIDE THE FACULTY OFFICE GALBRAITH 157, TO DETERMINE THE LOCATION AND SEATING FOR EXAMINATIONS.

STUDENTS WRITING ARTS AND SCIENCE EXAMINATIONS WILL WRITE AT THE TIME AND PLACE DESIGNATED ON THE ARTS AND SCIENCE EXAMINATION TIMETABLE.

THOSE STUDENTS WITH EXAMINATION CLASHES MUST REPORT THEM TO THE OFFICE OF THE REGISTRAR, GALBRAITH 157, PRIOR TO DEC. 3, 1999.

MISREADING THE TIMETABLE WILL NOT BE ACCEPTED AS A REASON FOR FAILING TO ATTEND AN EXAMINATION.

CHECK THE TIME OF DAY AS WELL AS THE DATE FOR EACH EXAMINATION. DO NOT ASSUME THAT THERE IS ANY FIXED "PATTERN" BETWEEN SERIES OF COURSE NUMBERS AND THE TIME OF DAY FOR THE EXAMINATION.

COURSE CODE	COURSE TITLE	TYPE	DATE	START
AER301H1	DYNAMICS	D	Thursday, December 16, 1999	2:00 PM
AER373H1	MECH.OF SOLIDS & STR.	D	Friday, December 17, 1999	9:30 AM
AER402H1	ATMOSPHERIC FLIGHT	X	Thursday, December 09, 1999	2:00 PM
AER410H1	GASDYNAMICS	B	Tuesday, December 07, 1999	2:00 PM
AER506H1	SPACECRAFT DYNAMICS & CONTROL	X	Tuesday, December 14, 1999	2:00 PM
APM288H1	ORD.DIFFER.EQUATIONS	A	Tuesday, December 07, 1999	2:00 PM
APM291H1	DIFFERENT. EQUATIONS	A	Wednesday, December 08, 1999	9:30 AM
APM384H1	PART.DIFFERENTEQUA.	C	Thursday, December 09, 1999	2:00 PM
APS103H1	ENG.SOCIETY & ENV. I	A	Wednesday, December 08, 1999	2:00 PM
APS105H1	COMPUTER FUNDAMENTALS	A	Friday, December 10, 1999	2:00 PM
APS185H1	TECH.WRIT.IN ENGLISH	D	Wednesday, December 08, 1999	2:00 PM
APS232H1	ENTREPRE.& SMALL BUS	X	Friday, December 10, 1999	9:30 AM
APS302H1	ENG.SOCIETY & ENV. II	A	Thursday, December 16, 1999	9:30 AM
BME495H1	MOLECULAR & CELL. BIO.	A	Tuesday, December 14, 1999	2:00 PM
BME595H1	BIOMEDICAL IMAGING	C	Monday, December 13, 1999	9:30 AM
CHE112H1	PHYSICAL CHEMISTRY	A	Friday, December 10, 1999	2:00 PM
CHE200H1	APPLIED CHEMISTRY I	B	Monday, December 13, 1999	2:00 PM
CHE203H1	APPLIED CHEMISTRY II	A	Friday, December 10, 1999	9:30 AM
CHE211H1	FLUID MECHANICS	D	Friday, December 17, 1999	9:30 AM
CHE221H1	CAL.& NUM. METHODS	C	Thursday, December 09, 1999	9:30 AM
CHE312H1	MASS TRANFUNDAMENT.	C	Tuesday, December 07, 1999	9:30 AM
CHE321H1	STATISTICS	C	Thursday, December 09, 1999	9:30 AM
CHE331H1	THERMODYNAMICS II	C	Thursday, December 16, 1999	9:30 AM
CHE332H1	REACTION KINETICS	C	Tuesday, December 14, 1999	9:30 AM
CHE349H1	ENG. ECONOMIC ANAL.	X	Wednesday, December 15, 1999	2:00 PM
CHE372H1	CHEM. THERMODYNAMICS	C	Monday, December 20, 1999	9:30 AM
CHE390H1	PHYS. & INORGANIC CHEM	A	Friday, December 10, 1999	2:00 PM
CHE393H1	TRANSPORT PHENOMENA	C	Wednesday, December 15, 1999	2:00 PM
CHE412H1	ADV. REACTOR DESIGN	C	Tuesday, December 07, 1999	9:30 AM
CHE466H1	BIOPROCESS ENGINEER.	A	Friday, December 17, 1999	2:00 PM
CHE468H1	NUCLEAR ENGINEERING	A	Wednesday, December 08, 1999	2:00 PM
CHE553H1	ELECTROCHEMISTRY	D	Tuesday, December 07, 1999	2:00 PM
CIV101H1	STRUCT. MAT. & DESIGN	A	Monday, December 20, 1999	9:30 AM
CIV102H1	STRUCT. & MATERIALS	D	Thursday, December 09, 1999	2:00 PM
CIV210H1	SOLID MECHANICS I	C	Friday, December 10, 1999	9:30 AM

exam schedule (cww)

COURSE CODE	COURSE TITLE	TYPE	DATE	START
CIV255H1	SURVEYING	A	Wednesday, December 08, 1999	9:30 AM
CIV261H1	ENGINEERING MATH. I	C	Friday, December 17, 1999	9:30 AM
CIV312H1	STEEL & TIMBER DESIGN	D	Monday, December 20, 1999	2:00 PM
CIV314H1	STRUCTURAL DESIGN	X	Monday, December 20, 1999	2:00 PM
CIV321H1	GEOMECHANICS	A	Thursday, December 09, 1999	2:00 PM
CIV331H1	TRANSPORT I - DESIGN	C	Tuesday, December 07, 1999	9:30 AM
CIV358H1	SURVEY CAMP	A	Friday, December 17, 1999	9:30 AM
CIV362H1	ENGINEERING MATH. II	X	Tuesday, December 14, 1999	9:30 AM
CIV416H1	REINF CONCRETE II	D	Monday, December 13, 1999	9:30 AM
CIV420H1	CONSTRUCTION ENG	C	Wednesday, December 15, 1999	9:30 AM
CIV465H1	AQUEOUS POLL.& CONT.	A	Monday, December 20, 1999	9:30 AM
CIV514H1	CONCRETE CONSTRUCT.	D	Wednesday, December 08, 1999	9:30 AM
CIV519H1	STRUCTURAL ANA. II	X	Monday, December 20, 1999	2:00 PM
CIV529H1	ROCK ENGINEERING	A	Tuesday, December 14, 1999	9:30 AM
CIV531H1	TRANSPORT III-PLANN.	C	Tuesday, December 07, 1999	9:30 AM
CIV540H1	TREATMENT PROCESSES	A	Monday, December 20, 1999	9:30 AM
CIV549H1	GROUNDWATER FLOW & CON	X	Friday, December 10, 1999	2:00 PM
CIV550H1	WATER RESOURCES ENG.	C	Thursday, December 09, 1999	9:30 AM
CSC180H1	INT. TO COMP. PROGRAM.	C	Wednesday, December 15, 1999	2:00 PM
CSC181H1	INT. TO COMP. PROGRAM.	C	Wednesday, December 15, 1999	2:00 PM
CSC326H1	PROGRAMMING LANGUAGES	D	Monday, December 20, 1999	2:00 PM
CSC444H1	SOFTWARE ENGINEER. I	A	Monday, December 20, 1999	2:00 PM
CSC470H1	COMP. SYS. MODEL. & ANA	X	Friday, December 10, 1999	9:30 AM
CSC488H1	LANGUAGE PROCESSORS	D	Monday, December 13, 1999	2:00 PM
ECE212H1	CIRCUIT THEORY	A	Tuesday, December 07, 1999	2:00 PM
ECE241H1	DIGITAL SYSTEMS	D	Friday, December 17, 1999	9:30 AM
ECE250H1	ELECTRIC CIRCUITS	C	Friday, December 10, 1999	9:30 AM
ECE253H1	DIGITAL & COMPUT. SYS	D	Thursday, December 09, 1999	9:30 AM
ECE302H1	PROBABILITY & APPL.	C	Wednesday, December 08, 1999	9:30 AM
ECE310H1	LINEAR SYSTEMS & COM.	D	Wednesday, December 15, 1999	2:00 PM
ECE320H1	FIELDS AND WAVES	A	Wednesday, December 08, 1999	2:00 PM
ECE330H1	SEMICONDUCT. PHYSICS	D	Tuesday, December 14, 1999	2:00 PM
ECE334H1	DIGITAL ELECTRONICS	C	Friday, December 10, 1999	9:30 AM
ECE341H1	COMPUTER ORGANIZ.	D	Friday, December 17, 1999	2:00 PM
ECE350H1	PHYSICAL ELECTRONICS	A	Friday, December 17, 1999	2:00 PM
ECE352H1	COMPUTER ORGANIZAT.	D	Friday, December 17, 1999	2:00 PM
ECE355H1	SYST. & SIGNAL ANAL. I	A	Tuesday, December 14, 1999	9:30 AM
ECE359H1	INDUST. ELECTRONICS	C	Wednesday, December 15, 1999	2:00 PM
ECE360H1	ELECTRONICS	C	Tuesday, December 07, 1999	2:00 PM
ECE370H1	INTRO. TO MICROPROCE.	A	Friday, December 17, 1999	2:00 PM
ECE371H1	ENG. ECONO. ANALYSIS	D	Tuesday, December 07, 1999	9:30 AM
ECE373H1	ELECT.SYS.ANAL.& DES.	D	Wednesday, December 15, 1999	9:30 AM
ECE410H1	CONTROL SYSTEMS	C	Friday, December 17, 1999	9:30 AM
ECE413H1	POWER SYSTEM ANAL.	C	Monday, December 13, 1999	9:30 AM
ECE416H1	COMMUNICATION SYSTEM	A	Thursday, December 09, 1999	9:30 AM
ECE418H1	DATA COMMUNICATIONS	D	Thursday, December 09, 1999	9:30 AM
ECE419H1	DISTRIBUTED SYSTEMS	A	Wednesday, December 15, 1999	9:30 AM
ECE424H1	MICROWAVE CIRCUITS	C	Friday, December 10, 1999	9:30 AM
ECE426H1	INTRO.TO OPTICAL ENG	D	Wednesday, December 08, 1999	9:30 AM
ECE431H1	DIGITAL SIGNAL PROC.	A	Tuesday, December 07, 1999	9:30 AM
ECE435H1	DIGITAL ELECTRONICS	D	Wednesday, December 15, 1999	9:30 AM
ECE443H1	SYSTEM SOFTWARE	B	Monday, December 20, 1999	2:00 PM
ECE445H1	BIOELECTRICITY	A	Monday, December 20, 1999	9:30 AM
ECE446H1	ELECTROACOUSTICS	A	Friday, December 10, 1999	9:30 AM
ECE471H1	INSTRUMENTATION DES.	D	Wednesday, December 15, 1999	2:00 PM
ECE512H1	ANALOG FILTERS	D	Thursday, December 16, 1999	2:00 PM
ECE533H1	INDUST. ELECTRONICS	A	Wednesday, December 08, 1999	2:00 PM
ECE534H1	INTEGRATED CIR. ENGN.	A	Tuesday, December 14, 1999	9:30 AM
ECE557H1	SYSTEMS CONTROL	C	Friday, December 17, 1999	2:00 PM
EDV220H1	ENGINEERING ECOLOGY	A	Tuesday, December 07, 1999	9:30 AM
EDV360H1	ENV. IMP. & RISK ASS.	A	Thursday, December 16, 1999	2:00 PM

exam schedule (eww)

COURSE CODE	COURSE TITLE	TYPE	DATE	START
ENG182H1	EFFECT. TECH. WRITING	A	Wednesday, December 08, 1999	2:00 PM
ENG284H1	VARIETIES OF FICTION	A	Monday, December 20, 1999	9:30 AM
HPS280H1	HISTORY OF SCIENCE	A	Thursday, December 16, 1999	9:30 AM
JTC413H1	HYDROMET. & AQUPROC.	C	Thursday, December 16, 1999	2:00 PM
JVM209H1	ENGINEERING MATERIAL	C	Thursday, December 16, 1999	9:30 AM
MAT185H1	LINEAR ALGEBRA	A	Monday, December 20, 1999	2:00 PM
MAT186H1	CALCULUS I	A	Monday, December 13, 1999	9:30 AM
MAT188H1	APP. LINEAR ALGEBRA	A	Thursday, December 16, 1999	2:00 PM
MAT194H1	CALCULUS I	A	Friday, December 17, 1999	2:00 PM
MAT196H1	CALCULUS A	A	Monday, December 13, 1999	9:30 AM
MAT198H1	LINEAR ALGEBRA	A	Thursday, December 16, 1999	2:00 PM
MAT280H1	CALCULUS	A	Tuesday, December 14, 1999	9:30 AM
MAT290H1	ADV. ENGINEERING MATH	A	Thursday, December 09, 1999	2:00 PM
MAT291H1	CALCULUS III	A	Tuesday, December 14, 1999	2:00 PM
MAT389H1	COMPLEX ANALYSIS	A	Wednesday, December 08, 1999	9:30 AM
MIE200H1	DYNAMICS	C	Monday, December 13, 1999	2:00 PM
MIE230H1	ENGINEER. ANALYSIS I	A	Thursday, December 09, 1999	2:00 PM
MIE231H1	PROB. & STAT. FOR ENG.	C	Wednesday, December 15, 1999	2:00 PM
MIE240H1	HUM. CENT. SYST. DESIGN	A	Friday, December 17, 1999	2:00 PM
MIE270H1	FLUID MECHANICS I	A	Monday, December 13, 1999	2:00 PM
MIE301H1	KINE. & DYNAM. OF MACH.	C	Friday, December 10, 1999	9:30 AM
MIE310H1	THERMODYNAMICS	X	Tuesday, December 07, 1999	9:30 AM
MIE312H1	FLUID MECHANICS I	D	Thursday, December 09, 1999	9:30 AM
MIE337H1	STAT. & EXPER. DESIGN	C	Tuesday, December 14, 1999	9:30 AM
MIE342H1	CIRCUIT THEORY	A	Thursday, December 16, 1999	9:30 AM
MIE343H1	INDUST. ERGO. & WORKPL.	D	Wednesday, December 15, 1999	9:30 AM
MIE353H1	DATA MODELLING	A	Monday, December 20, 1999	9:30 AM
MIE358H1	ENG. ECONO. & ACCOUNT.	A	Wednesday, December 08, 1999	9:30 AM
MIE360H1	SYS. MODELLING & SIM.	C	Tuesday, December 07, 1999	9:30 AM
MIE371H1	ENG. ECONOMIC ANAL.	X	Monday, December 13, 1999	2:00 PM
MIE372H1	CONTROL SYSTEMS	A	Monday, December 13, 1999	9:30 AM
MIE404H1	CONTROL SYSTEMS I	D	Wednesday, December 08, 1999	9:30 AM
MIE414H1	APP. FLUID MECHANICS	D	Monday, December 13, 1999	9:30 AM
MIE440H1	MECHANICAL DESIGN	A	Tuesday, December 14, 1999	9:30 AM
MIE444H1	MECHATRONICS PRIN.	D	Monday, December 13, 1999	2:00 PM
MIE448H1	COGNITIVE ERGONOMICS	A	Monday, December 20, 1999	2:00 PM
MIE451H1	DECISION SUPPORT SYS.	A	Tuesday, December 14, 1999	2:00 PM
MIE467H1	ADV. OPERATIONAL RES.	C	Friday, December 10, 1999	2:00 PM
MIE512H1	AIR POLL. FORM. & CON.	C	Friday, December 10, 1999	9:30 AM
MIE562H1	SCHEDULING	A	Monday, December 13, 1999	2:00 PM
MIE566H1	DECISION ANALYSIS	C	Thursday, December 09, 1999	9:30 AM
MIN320H1	DRIL. BLAST. & ROCK FRG	X	Wednesday, December 08, 1999	2:00 PM
MIN430H1	ECOLOGICAL ENGINEER.	A	Wednesday, December 15, 1999	2:00 PM
MMS101H1	APP. SCI. MATERIALS	A	Friday, December 10, 1999	2:00 PM
MMS202H1	THERM. & PHASE EQUIL.	C	Tuesday, December 07, 1999	9:30 AM
MMS207H1	STRUCT. & CHAR. OF MAT.	A	Friday, December 17, 1999	9:30 AM
MMS270H1	MATERIALS SCIENCE	C	Tuesday, December 07, 1999	2:00 PM
MMS313H1	HIGH TEMP. PHYS. CHEM.	A	Monday, December 20, 1999	2:00 PM
MMS314H1	KINETICS OF MAT. PRO.	C	Friday, December 10, 1999	2:00 PM
MMS315H1	ENVIR. DEGRAD. OF MAT.	A	Thursday, December 16, 1999	2:00 PM
MMS316H1	MECH. BEHAV. OF MATER.	A	Tuesday, December 07, 1999	2:00 PM
MMS401H1	MATER. SELECT. & DESIGN	A	Friday, December 17, 1999	9:30 AM
MMS402H1	SOLIDIFICA. & CASTING	A	Monday, December 20, 1999	9:30 AM
MMS420H1	BIOMATERIALS	A	Friday, December 10, 1999	2:00 PM
MMS450H1	PLANT DES. PROC. IND.	A	Tuesday, December 07, 1999	2:00 PM
PHY180H1	PHYSICS I — MECHANICS	C	Monday, December 13, 1999	2:00 PM
PHY280H1	PHYSICS II	A	Monday, December 20, 1999	2:00 PM

*Cannon reporters Wendy Tam and Cindy Wong were sent forth
to discover of what exactly marks are a function.
Here are the perspectives of the people who give and those who receive...*

Marks = f(?)

BY WENDY TAM

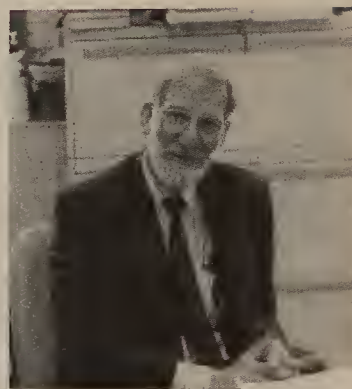
What exactly is a mark? According to Professor Kunov, a mark is a function of student performance, knowledge and skill as defined by a test. Professor Joy and Professor Lavers believe marks reflect performance and understanding. It measures the quality of a student's work, according to Professor Rose. But what exactly do marks mean? Are marks the best description of an individual? And how appropriate is the course breakdown in making the best "judgment" of a student?

Needless to say, it is discouraging when a student puts effort into studying but is unable to attain the marks he anticipates. But are marks an overall accurate representation of a student? Every student is unique: some choose to work hard and some opt to spend their time doing other things. It is because of this that Professor Lavers doesn't consider marks to be a good

The marking scheme is also an issue to be considered. Since marks do not provide the complete view of a student, what kind of things should be incorporated to make a more accurate evaluation? All professors mentioned an oral exam, but due to the large number of students and time/resource restrictions, it is difficult to provide such an opportunity. Professor Joy considers an oral exam to be the best kind of exam; not only is it interactive, but it involves public speaking, which is something one must do in some form or other after graduation. Aside from interpersonal and communication skills, certain qualities cannot be measured numerically. Professor Kunov believes courage is an important trait. In design, it is always easier to follow than to create, and the courage to try something new is an invaluable skill. Professor Rose thinks there should be more projects involved in a course. Engineering is all about design and creation, and projects are better measures of engineering ability than exams.

But why are certain things in the course worth more than other things? Exams carry a significant amount of weight compared to labs and assignments. Does this imply that labs and problem sets are not significant in the long term? The professors explained that copying is common in unsupervised work, to have it worth a substantial amount of the course would be unfair. Professor Lavers thinks unsupervised work should not be given marks at all because they are part of the educational process. However, he notes that some students are driven by marks, in other words, if no marks are allotted to a task, then it is simply not worth doing. Professor Rose has a similar view: marks motivate people to do work; they direct the students to learn. Although Professor Kunov also observes that some students will not work unless they have frequent deadlines to keep them on track, he thinks it would be preferable for the final exam to be worth 100% of the course mark. This would provide much more freedom in the learning process for students throughout the year. Professor Joy adds that the level of difficulty for each quiz and exam is an important factor in assessing a student; if it is either too difficult or too easy, it is essentially ineffective in evaluating a student.

It's normal to feel discouraged or disappointed after receiving a poor mark. But why do we feel this way? There's obviously the issue of passing a course, but marks also raise the self-reflective question: "Should I really be in Engineering?" Are marks really the best indicator of the probability of success in becoming an Engineer? Professor Rose believes that marks are not a good measuring process because tests, quizzes, and exams are artificial situations; good performance in an artificial situation doesn't guarantee success as an Engineer. It is possible that one could be a good engineer but a poor exam writer. Professor Kunov notes that on exams, just by stating a question on the paper, 80-90% of the work has already been done for the student. In real-life situations, an Engineer must first identify the problem, decide what questions need to be asked, and choose the most appropriate model/method of approach. Professor Kunov considers marks not so much as an indicator, but the best



Professor Kunov observes that some students will not work unless they have frequent deadlines to keep them on track

predictor as to whether one will be a successful engineer. However, he notes that it is a far from perfect predictor. Marks are only one dimension of the entire picture. Low marks may indicate that one is not well-suited for Engineering, but Professor Kunov considers it important that a student be proud of what he has done and what he has accomplished in his work. Professor Lavers has a similar view: marks are only one side of the whole; creativity and the ability to lead and communicate are intangible qualities that, though they are not reflected through marks, are important skills. Professor Rose notes that enthusiasm in Engineering is important in the hiring process. Experience in working on a design project, regardless of the mark, can be invaluable to one's resume. It is not so much the mark that is important, but the overall process.

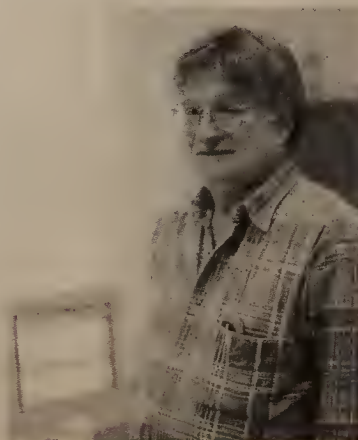
It is comforting to know that there are some multi-dimensional professors in U of T Engineering who don't consider marks to be the definitive way of judging a student. Engineering is a journey, and although marks constitute an important part of that journey, they are not the only factor that determines success in reaching the destination.

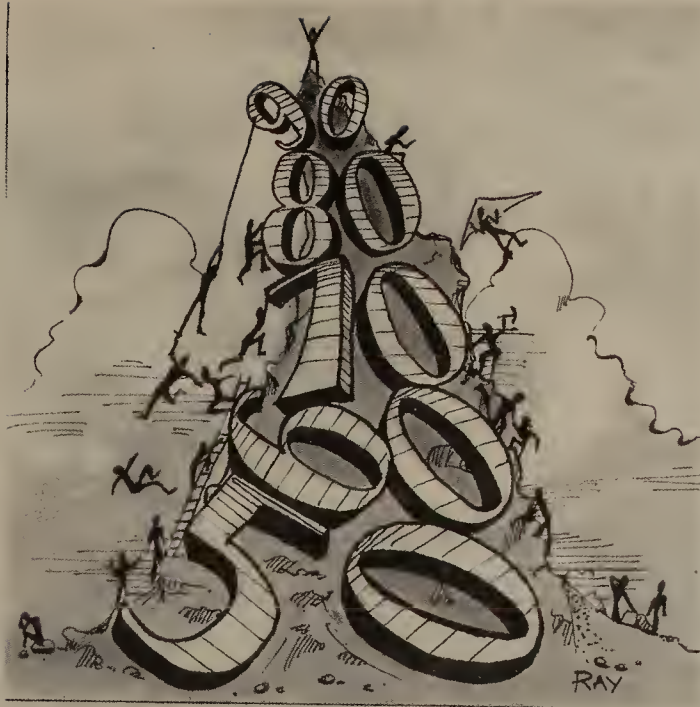


Professor Joy notes that individual marks are not a good ranking of capability; they are simply an indication of how the student performed at that particular time and at that particular moment.

descriptor of a student - the marks achieved do not represent intelligence. Professor Joy notes that individual marks are not a good ranking of capability; they are simply an indication of how the student performed at that particular time and at that particular moment. The combined mark is a more reasonable measure and perhaps the safest way to evaluate a student because it is based on the judgment of more than one professor and thus would result in greater consistency.

According to Professor Laver, some students are driven by marks, in other words, if no marks are allotted to a task, then it is simply not worth doing.





Marks: The Student's Perspective

BY CINDY WONG

"Time's up!" The midterm was over. Almost immediately, whispers grew into loud discussions of answers and exchanges of comments on the test. After a general survey of opinions, a consensus was made on the difficulty level of the midterm — it was pretty darn hard! With frowning faces, many students started to calculate how many marks they may have lost and what grade they may end up with. Worries were somewhat consoled and all this frenzy finally died down when someone said: "I don't think the average on this midterm will be very high."

Marks obsessive? Perhaps. No matter how many times we try to convince ourselves that it is the process of learning that's important, we still need to know what yields from this process. Isn't that what motivates us - to know that our efforts bear fruit?

So supposedly, these numbers assigned as our "marks" are used to indicate how we're doing. Yet, what exactly do these percentages mean? Do they really reflect the truth? Our intelligence? Our abilities? Our knowledge?

Not really. Most students agree that marks are like temperature readings on a thermometer. You have your normal body temperature, your brain-frying fever and your cadaver coldness. The readings are meaningless without comparison to the normal.

Similarly, the actual values of our marks don't really mean all that much without class averages to compare them to. In essence, comparison is the only tangible way of interpreting our evaluation.

The class average serves as a reference point with which we assess our caliber. "It's all relative," said a second year engineering science student. "It wouldn't make much of a difference if we were given letter grades; except perhaps for those who are more competitive." Indeed, we often describe our marks as being above, below or around average. With this mentality, having numerical percentages only help to make the standings amongst students less definitive.

In effect, marks serve to rank us amongst our peers. The question that arises then is why don't we just use a simple ranking system; considering it epitomizes the sole purpose of having marks anyway? Undeniably, several students have expressed their displeasure towards the fact that we were not ranked last semester. To many, it is the only way for you to really know where you stand in your class. While on the other hand, some believe that ranking can be quite harsh as it presents what we want to know too bluntly.

As it holds right now, what we really want to know — our ranking, not our marks — is presented to us in a fudged form. When a student gets a 95% in a course, does that mean he or she is 5% away from knowing all that there is to know about the particular topic?

The student is probably not even 5% away from knowing what the professor thinks he or she should know! Bearing the effects of the bell curve, the marks printed on our report cards are usually not what your problem sets, labs, quizzes, tests and exams total to.

Since our marks are bell curved, what exactly do they represent then? Does the 0.1% that we fight for really mean all that much? Beyond the walls of Skule™ it probably doesn't. Most companies agree that the marks we write on our résumés perform only as tiebreakers between candidates who have presented themselves well in the other portions. Thus, it is very possible to have a successful career without being at the top 10% of your class.

Essentially, marks alone don't really indicate much. So, is it really worth all the emphasis that we place on it? That isn't to say we should not work hard and strive to do well. However, it is definitely not worth spending hours punching numbers into a calculator to find out what your possible final grade will be the night before a test. All that will result from doing so is a poor grade on the test that you'll surely kick yourself for afterwards (and believe me, I know people who have done that!).

So, be sure not to beat yourself up over some numbers and recognize that the absolute mark that you receive often doesn't indicate what you think it does. With that said, good luck on finals everyone!



good to know

First Steps To Starting Your Own Business

FROM THE ENGINEERING CAREER OFFICE

The Engineering Career Office has lots of resources for people interested in starting their own businesses. A partial list of good information includes:

BOOKS IN THE ENG. CAREER OFFICE

Upstarts Start-Ups, Ron Lieber—How 34 Young Entrepreneurs overcame youth, inexperience, and lack of money to create thriving businesses

Starting a Small Business in Ontario, Ministry of Economic Development, Trade and Tourism—A sound business approach to setting your own company

Eight Steps to Self-Employment: A Practical Guide for Women, EduService/ Bank of Montreal—By the Year 2000, it is predicted that almost half of Canada's new companies will be started by women.

Young Entrepreneurs Workshops, Self-Help/Business Enterprise Centres—for general information on the Young Entrepreneurs Program call the Ontario Business Call Centre at 1-800-567-2345 or in Toronto 416-954-4636

PROFESSIONAL DEVELOPMENT CENTRE, FACULTY OF ENGINEERING

The Professional Development Centre offers a Mentortech Program every year (free to ten 4th year students every year). Please contact Terrence Eta (eta@ecf.utoronto.ca) for more information.

INTERNET SITES WITH LOADS OF INFORMATION

A brief blurb from a handbook entitled, "Get Wired, You're Hired" by Mark Swartz: "What if I am Considering Self-Employment? Guess how many self-employed Canadians there are today. 500, 000? Maybe 1.5million? Try close to 2.5 million people. That's over 18% of the entire workforce! If you've ever thought about starting up a business or being a consultant or a contractor, you'll be glad to know that there is a huge resource base awaiting you on the web."

Canadian Youth Business Foundation — www.cybf.ca/main.htm

A site that provides program information from the Canadian Youth Business Foundation, a non-profit, private-sector initiative that provides mentoring, business support and lending to young Canadian entrepreneurs.

The Young Entrepreneurs Association — <http://yea.ca> Canada's voice for young entrepreneurs.

Canada Business Service Centres — www.cbssc.org

Loads of links to many of the resources that are out there for Canadian small business people and wannabes. Check out the provincial links for local resources too.

WetFeet.Com —

<http://www.wetfeet.com/advice/articles/entrepreneur.asp>

"Dying to start your own business? Creating a business plan is just the beginning. We talked to VCs and entrepreneurs and found out the keys to success. If you've got the idea, but aren't sure what the next step is, visit us!"

CAREER CENTRE

Visit the Career Centre Resource Library for other resources. They have a large section on entrepreneurship.

Cannonball

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TORONTO COLONY HOTEL
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STAGE BAND, AND PRIZES, PRIZES, PRIZES!

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SKULE BEFORE EXAMS AND THE FIRST WEEK BACK
TO SKULE AT THE ENGINEERING STORE.

Films Under Fire — BY JOHN MOORES

Pierce Brosnan in *The World is Not Enough*

Rated AA — FUF rating: ★★

Let me first of all mention that I am quite the James Bond fan. Maybe it's a bit of a guilty pleasure; I mean is it entirely respectable to enjoy an entirely formulaic film loaded down with sex, violence and crude punning humour? Then again, one has to admit that agent 007 does manage to do it with copious quantities of style, and as such, when a Bond film is done just so, it can prove to be a very enjoyable evening.

In this spirit, Pierce Brosnan has come back for the 19th installment of the most lucrative movie franchise on the planet. In the spirit of the best Bond films (which suggested a gigantic scope), the film is entitled *The World is Not Enough*. Despite all this, not to mention the trademarked spectacular stunts, such as a high-speed boat chase on the Thames (and in the streets of London as well!), the film is a disappointment.

This seems surprising at first glance. All the favourites are back, from M to Moneypenny to Q. The girls, the guns and Bond's BMW roadster (with all the usual modifications), are all there along with his singular wit. However, it's a matter of what's not there. The performances of some new faces are disappointing. While one can comprehend the appointment of John Cleese as the new Q, however, there is something which just doesn't fit about his character. As well, Denise Richards is positively wooden in her role of nuclear scientist Dr. Christmas Jones. She and her character seem very out of place in a Bond film. The largest, and in the end the fatal flaw of the film is its lack of a worthy adversary for Bond. Bond films have never been partial to coalitions; it leaves no clear picture of who is Bond's equal and worthy adversary. Granted, there are some interesting opponents—Renard (Robert Carlyle) is a man who is impervious to all emotion and sensation, thanks to an assassination attempt which left him with a bullet in his brain. However, he receives little screen time compared to his co-conspirator Electra King (Sophie Marceau). Despite the fact that it's usually not a requirement for Bond Villains to make an impression, here this is a mistake. It is not helped by the fact that Carlyle—who presents a non-imposing on-screen nature—plays his character with a cold sheepishness.

The twists and turns in the plot (which contains double and triple crosses as well as the annoyingly unnecessary augmentation of M's character) leave us with a vague sense of who, if anyone, is in charge on either side. As such, it appears to the viewer that Bond is squaring off against a gaggle of unorganized bandits. In fact, the whole film doesn't seem to comprehend whether it is coming or going. Typically, the title of the film is the starting point; it refers to the major villain, perhaps, or his plot, or his beautiful consort. Here, *The World is Not Enough* occurs in one line with none of the effect as Blofeld's *You Only Live Twice* in the film of that namesake.

Bond films need not be exceptional to be fun. Brosnan's other two Bond films, *Tomorrow Never Dies* (which did nothing special) and *Goldeneye* (which succeeded mostly by recycling all that was good from the Connery Bond films of the 1960's) were excellent. It's more enjoyable to rent these movies (and not a whole lot different then in theatres if you have a DVD player) than it is to go watch *The World is Not Enough*.

Blue and Gold

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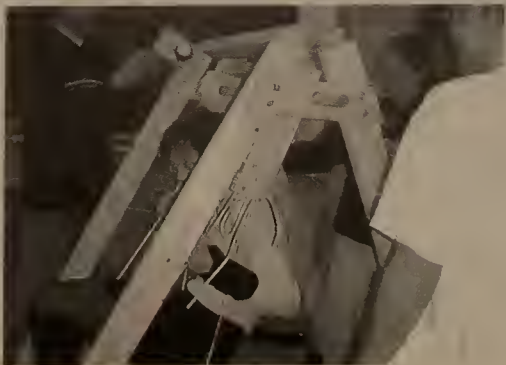
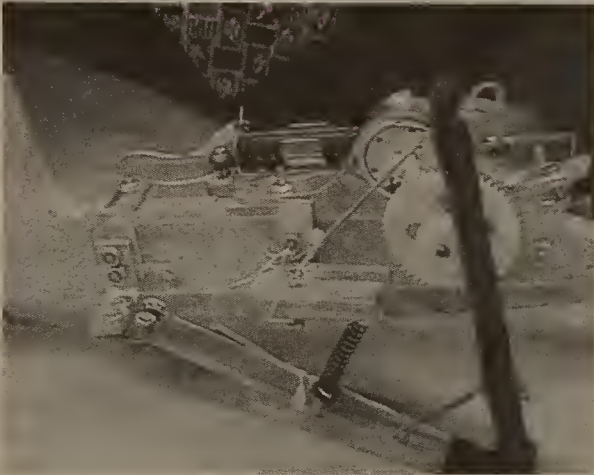
\$5 per person BUT you'll get \$15 in
chips when you get there!
(you must be over 19 years old)

This man is charging a battery.



BY JEAN CRUZ

On November 8 and 9, students in Professor Shu's 4th year Mechanical Design course demonstrated everything from a child's swing to a revolving door, from a hairbrush to a dance floor. The projects had a fantastic claim: they all charged batteries. Each used a motor backwards as a generator to charge the battery: i.e., instead of using a motor to convert electrical power into mechanical power, it was used to convert human mechanical power into electrical power to charge a rechargeable battery. Dr. Karon MacLean, a guest mentor from Interval Research Corp. in California, organized the project and provided feedback and guidance. "It's a great way to learn the fundamentals," says Dr. MacLean— and Prof. Shu agrees. "It's one thing to be able to write the equations for a motor, but having to physically use one in a creative application stimulates another level of appreciation."



profile



Undeformed through Stress and Strain: Civil Engineering's Michael Collins

BY JOHN MOORES

This past month, a number of awards were distributed among the professors of the University of Toronto. Four new full professorships (which would bring the University's total to thirty) were at the top of the list. Interestingly enough, one of these reached into the faculty of Applied Science, and was bestowed upon Civil Engineering's Michael Collins.

It is not a surprising development in the least, for Collins, a graduate of the University of New South Wales, native of New Zealand, and in Canada, a professor in Structures and Materials engineering for thirty years, is one of the department's most decorated lecturers. Not only does he hold the Bahen/Tanenbaum chair, but he is the recipient of the 1996 Medal for Distinction in Engineering Education in which the Canadian Association of Professional Engineers described him as "Canada's foremost expert on concrete structures." Perhaps of more relevance, in the grand scheme of things, is his contribution to the literature, as the originator of Compression Field Theory.

It was with this knowledge that I had the opportunity to speak with Dr. Collins on a blustery Friday afternoon, several weeks ago. I had been preparing this article for some time and as such, I had a good idea of what I was curious. I arrived and he invited me in with a congeniality and a warmth belying his formal lecturing style. The walls gave a lived-in timelessness, displaying photographs of various structures—a bridge in Scotland, another in the north of Italy—as well as photos of New Zealand, a Norwegian Oil Platform, and a chart of the graduate students he has supervised over the years.

But why was it that he had chosen the University of Toronto? "I originally came here for two years on my way back to New Zealand, but two stretched into thirty. My intentions were to do a couple of years doing post-doctoral studies in North America... when I looked for a post doctoral position, they offered me an assistant professorship, so I said, 'Ok, I'll take that' and one thing led to another." However, Collins had indeed traveled a great distance. "When you grow up in the most isolated nation on earth, you want to go out and see the rest of the world. It's quite typical for New Zealanders to head out and see the world. What's atypical is not to come back."

Collins had grown up on the southern island and had spent his High School days at a Catholic boarding school named St. Bede's, after the English Monk of the 8th century. As he smilingly recalled, the school was comprised of "500 boys, 26 rugby teams." After that, he went on to study Civil Engineering at University of Canterbury. "New Zealand's a seismic zone... Civil engineering was the most important discipline at the time. More than half the engineering students were civil engineering students." Collins also had some more personal motivations. "I was interested in designing safe structures, that sounded interesting and challenging."

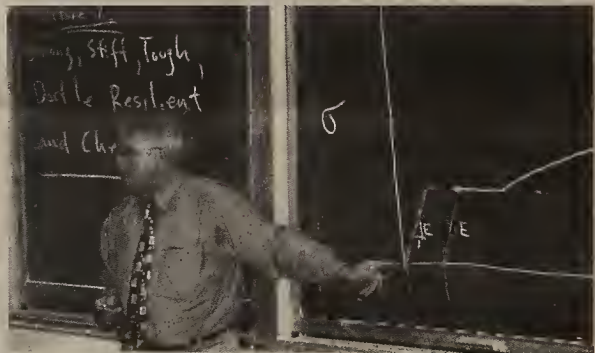
Following this, he went on to pursue a P.Eng. at the University of New South Wales in Australia, but contrary to many of his peers, he did not go into practice. "I started teaching right away, in the modern trend." Finally ending up here after having spent two years in Boulder at the University of Colorado. It is in this place that he has made his home. "Here in Toronto I've been lucky in that I've been able to get professional experience in terms of consulting as an academic," he told me. "It is very valuable as it feeds into both your teaching and your research and you get asked interesting questions by consultants about how you do this. It makes you think—and sometimes you don't have the answers so you have to extend yourself. The practice feeds the research and the research feeds the practice and they both feed the teaching."

By this point, Collins' eyes were alive. As can be attested by anyone who has attended one of his lectures, he enjoys placing things in context, spreading the realization that engineering is not just formulae, but also history, philosophy and art. It runs two ways, though. "I get tremendous satisfaction out of seeing students understand complex concepts... It's akin to solving a puzzle." A thirty-year veteran of the Engineering Science program, he makes no apologies for his style. "I have found it very interesting and satisfying to see how much can be conveyed in the first term of the first year of an engineering undergraduate... My belief is that if you think about it long enough you can find ways of presenting the interesting material so that bright, capable brand new university students can understand and make that leap."

Famous though, are the stories. I was lucky enough to hear several that day, stretching from roman times to the middle ages, to Lord Rutherford, a fellow New Zealander who taught for several years at McGill. One of these was particularly fascinating, having been a problem which Collins himself had solved. In August of 1991, an oil platform had been lost off the coast of Norway. The engineers involved had neglected to consider that the 25metre tall structure would need to be lowered for deck mating and, due to the pressure, it began taking on water, sank and was crushed by the fjord at an economic loss of \$1 billion (US). What was more serious, was that it had taken

three years to construct and only eighteen months were left before the contract would expire. So they asked Collins and U of T for help.

"My graduate students and colleagues here, we worked day and night for weeks and weeks on end to solve that problem. To work out what went wrong and make sure that the next one was correct and it was. It's in place and it met the eighteen months." The conclusion was dramatic. There were two groups, U of T and a European group testing a particular design. The Europeans believed it would fail, while the Canadians thought it would hold. It came down to



"I have found it very interesting and satisfying to see how much can be conveyed in the first term of the first year of an Engineering undergraduate.... My belief is that if you think about it long enough, you can find ways of presenting the interesting material so that bright, capable brand-new university students can understand and make that leap."

a test at Galbraith and in the end Collins and his team persevered. He lists it as the highlight of his career.

So what does Collins, still only fifty-eight, plan for the future? "Lots of things still to do, only problem is trying to find the time." There are books in the works. Aspiring engineering science students may be pleased to know that there is a textbook for CIV 102 in the works, though Collins is a little apprehensive about writing it, in addition he is putting together an engineering science option which, if all goes well, will be available in two years. As well, he intends to write about Sir Robert Hooke, a long-time hero of Collins'. "Amid the observance of the discipline of the rule and the daily task of singing in the church it has always been my delight to teach and to write." [St Bede]—there is no better definition of a scholar."

Yet, Collins still insists that he has miles to go before he sleeps. He recently had the opportunity to visit Scotland and Hadrian's wall. So what advice does he have to offer a fellow engineer? "Find out what gives

continued on next page

Pathetic Fallacy

BY RICHARD KNIGHT

Pathetic Fallacy. Incorrectly projecting (attributing) human emotions, feeling, intentions, thoughts, traits upon events or objects which do not possess the capacity for such qualities. A term coined by John Ruskin (1819-1900). In literature, you often find it when nature mimics the emotions of a main character by changing the weather patterns. King Lear is a prime example, Shakespeare being particularly fallacious in the pathetic vein, and is reflected in the scene where a great storm rages around the mad King and his fool. We see his insanity in the insanity of the tempest. [Of course I'm being needlessly pedantic here, probably more information than you need to know, but I'm trying to set a tone here and if I've bored you with too many details, I'm sorry. If, however, you're impressed by my erudite intellectualism—well OK then!] Pathetic fallacy works very well in literature but rarely in "real" life, and seemingly never in mine. The universe travels its course. I travel mine.

I know this to be true, for the considerable amount of empirical evidence I've collected over the years attests to the fact and shows me categorically, that pathetic fallacy in nature works only in books. Two cases in point will illustrate what I mean. Firstly, the day my dog was hit by a car and died the sun was shining brightly, warmly and did not have the decency to go completely black at the moment of my most terrible shock and horror. I was four at the time and the dog pushed me out of the way of an oncoming truck but didn't manage to get clear himself. The dog and I were inseparable companions and suddenly we were no longer. I cried and was incredulous that all of creation was not crying too.

Now I realize that this first example is not the most pleasant one to contemplate and the fact that I've come right out and hit you over the head with it might probably make you reconsider reading on. You're probably thinking "OK dead dog, little kid crying—that's just great! What next? Famine? War? Pestilence? And whatever they call that other apocalyptic horse guy?" I simply needed to illustrate my point strongly. I'll refrain from pushing any more emotional downer buttons, but the essential fact remains... the universe went along its merry way.

The second example I will present as evidence is less intense and more mundane, yet valid proof nonetheless. The day I received my first real kiss... yes I know what you're thinking, I said less intense and more mundane—bear with me. The day I received my first real kiss was on the steps of the Church one Sunday morning. I had loved this particular woman all my life and we were both just sitting on the steps talking. I was wearing a dark suit and a bow tie, she was wearing a blue dress that highlighted her wonderfully sky blue eyes and long flowing blonde hair. It was a magical moment for me, but it was raining like cats and dogs. It was dark, gloomy, and cold—good thing for that too as it gave me an excuse to put my arm around her. We looked in each others eyes for a while and then I leaned in and kissed her. I thought that nature should at least of allowed a tiny ray of sun to shine at

that moment but the universe provided nothing in the way of mood lighting or music. I sort of fault the universe for not helping my romantic endeavor as the relationship lasted a brief passionate week and then this woman whom I had worshipped forever, left me for another man, and as I recall the day I saw them together the sun was also shining very brightly and warmly. I was five and so was she and the other man had a bike without training wheels and he was six.

I learned at an early age that I could expect no assistance from the universe to provide backup to my emotional states, whatever they were. This was an unfortunate discovery for me as I had been raised in a society and culture where everything has a soundtrack. Every movie or TV show has a soundtrack (and a lot of pathetic fallacy too! Especially the horror flicks I liked as a teenager, with angry lightning flashes et al), every shopping experience is associated with planned happy Muzak™ sounds to encourage us to feel good and consume. I eschewed these obvious ploys of man made environment to influence or reflect my moods. Manufactured pathetic fallacy is just pathetic. I wanted the "real McCoy". Wanted the universe to wake up and notice me, to reflect, and thereby reinforce, the make up of my mood.



Like this morning. This morning I was in a miserable mood. I've not seen my love for an eternally endless epoch. For those of you who require more details than provided by literary alliteration I can be more precise to say approximately 18 hours. For sure the more jaded types will scoff at my plight, but they are not walking in my shoes and one man's sixty-four thousand eight hundred seconds is another man's epoch. I woke up with the expectation of meeting her for breakfast at a little café we frequent. I then remembered that no such meeting was going to take place. Schedule's being what they are on this particular day a rendezvous was unable to be penciled in. I was aghast at the thought of it! I knew she would not be there because we talked about it at our last meeting and I was paying attention. I was. Stop rolling your eyes and saying "Ya right". Look, who's telling this story anyway? I simply had fallen into a pattern of seeing this woman for breakfast frequently and in the daze and haze of morning I didn't remember that it just wasn't going to happen today. If there was ever a

time for the universe to kick in with some unadulterated pathetic fallacy today would have been it. It would have been a great day for a drizzly rain, complete with a cold north breeze, dark gray clouds, and I could sit in my bay window, listen to some sad music, sip my morning cup of coffee alone, and wallow in my own melancholia. The universe, as usual, didn't play ball. I opened the curtains and was assailed by a glorious summer day. The sky was a bright blue with no cloud in sight.

I got dressed, made it to my car, cursed the universe silently to myself and drove off to our café to wallow in self pity and loneliness over a cup of hot java. The drive was uneventful and morose. I was feeling the pains of a love lost with no hope of seeing her again for maybe another eight hours or so... The utter inhumanity of it all—my sorry state reflected back at me by bright, warm, pathetically cheery sunshine. I don't quite think that things could have gotten any worse. I was, however, as I often am, wrong. When I got to the café, another couple was sitting in our booth, and injury of injuries to my heart and soul, they were holding hands and laughing and smiling... it's too much to bear and I can describe it no more. I had hoped to at least be able to drink a cup in

my solitude and sit in our seat and search, with faint hope for some imprint of her there, a whisper of her voice perhaps still echoed there for my ears to hear. Instead I am confronted by lovers unfamiliar to me enjoying what I desired most and what I was deprived of. The gray drizzle of my mood became a cloud burst of despair. I purchased a coffee "to go", retreated to the fortress of solitude that was my car and drove to my office. I thought that I could hear faint otherworldly laughter as I put my sun glasses on to shield me from a cheerful day.

By the time I arrived at my office I was in a foul mood. I wasted no time and I threw myself into my work determined that I was going to milk as much productivity from this frustration as possible. I turned on my computer and started to read through the days notices and electronic mail. I was startled for a moment when a single note arrived... It was from her. I felt my heart beat a little faster as I opened it... and as I read the words, my gloomy rain soaked existence, brightened immediately. The few short lines read:

I missed you too but it'll just make seeing you tomorrow and Friday that much better. I'll call you later on. love

(*)

I was a fiery sun beaming on a sandy beach and a sparkling ocean. My heart soared. The phone rang and the call display boldly announced her name and number and the joy I was experiencing at that moment was multiplied a hundred fold! I picked up the phone and said hello and as I leaned back in my chair to savor the sweet sound of her voice and loose myself in her words I glanced out the window. A light rain had started to fall, and the sunny sky had become overcast. I chuckled a little to myself. Typical. The Universe goes its way, I go mine.

© Richard Knight

Professor Collins

continued from page 14

you pleasure in terms of technical work, what do you enjoy doing. You're very fortunate if you can make your career doing what you enjoy doing. To be paid to do something that you'll do for nothing is the recipe for a happy life." Collins himself speaks from experience. "I've been lucky enough to find that. I think if you're doing something from which you do not get personal satisfaction—it doesn't matter how much you're being paid—you're not going to have a satisfactory life, in my opinion."

"So, you have to look at the trade-offs: personal satisfaction, financial rewards, opportunities and do you make a difference in the end... I think all of us like the feeling that at the end of the day we've done something which has made a difference and made the world a little bit better, and as engineers we have that opportunity which I think is a great part of the satisfaction of our career, that it is something worthwhile that we do, if we do it well, if we do it for the right motives, and in the right way, we should be satisfied at

the end of the day. What more could you ask?"

"The other thing is to enjoy life, don't let it pass you by. Carpe Diem, I think that's the natural spirit of engineers in any case; that we work hard, play hard. We would like to see serious problems which are facing society and help to solve them; we're problem solvers, and we get a lot of satisfaction out of coming up with ingenious solutions." Palmam qui meruit ferat.

the back page

...Wanna dance?

...Will you marry me?



These and other controversial questions were answered at the Civ, Mech/Indy, and EngSci DinnerDances this year.

(...she said yes!)

